

# Subsystems/Component Assurance Approaches

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## Assuring Subsystem Reliability

### Organization (People and Processes)

Management

Engineering

HW

SW

Manufacturing

Documentation (run records for comparative analysis)

### Facilities

### Processes

- Enhance Testing Depending on Customer Requirements
- Tailored Standards Based Testing
  - GEVS/461F/IEEE/... Discuss GEVS Testing Suite

- Design Practices
  - Parts Program (Automotive, ...)
    - Data Base of Parts
  - Derating of Components
  - New Design, Reuse, Derivative Design
  - Design Reviews
  - Program dictates testing required

- Environmental Testing (Summary)
  - Electrical & Functional Testing
  - Structural Testing
  - EMI/EMC (MIL-STD-461F)
  - Thermal Testing
  - Contamination
- Qualification Testing
- Acceptance Testing

- Electrical & Functional Testing
  - Corner Case Testing
  - Transitory
  - Steady State
  - Test in actual system if possible

- Structural Testing
- Verify structures derating regarding loads
  - Simulation vs Test

- EMI/EMC (MIL-STD-461F)
  - Usage of common standards to reduce testing costs
  - Tailor specification for application
  - Conducted Emissions
  - Conducted Susceptibility
  - Radiated Emissions
  - Radiated Susceptibility
  - Reduces integration risk

- Thermal Testing
  - Corner cases
  - Thermal Vacuum

- Contamination
  - Maybe required by contract

# Conclusion

- Tailor testing depending on program
- Quality and Reliability is the primary objective